

## NASA-SETI MICROWAVE OBSERVING PROJECT - TARGETED SEARCH ELEMENT

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The Targeted Search Element (TSE) performs one of two complimentary search strategies of the NASA-SETI Microwave Observing Project (MOP): the Targeted Search. The principle objective of the Targeted Search strategy is to scan the microwave window between the frequencies of one to three gigahertz for narrow-band microwave emissions emanating from the direction of 773 specifically targeted stars. The scanning process is accomplished at a minimum resolution of one or two Hertz at very high sensitivity. Detectable signals will be of a continuous wave or pulsed form and may also drift in frequency. The TSE will possess extensive Radio Frequency Interference (RFI) mitigation and verification capability as the majority of signals detected by the TSE will be of local origin. Any signal passing through RFI classification and classifiable as an Extraterrestrial Intelligence (ETI) candidate will be further validated at non-MOP observatories using established protocol.

The Targeted Search will be conducted using the capability provided by the Targeted Search Element. The TSE provides six Targeted Search Systems (TSS) which independently or cooperatively perform automated collection, analysis, storage, and archive of signal data. Data is collected in 10 megahertz "chunks" and signal processing is performed at a rate of 160 megabits per second. Signal data is obtained utilizing the largest radio telescopes available for the Targeted Search such as those at Arecibo and Nancay or at the dedicated NASA-SETI facility. This latter facility will allow continuous collection of data. The TSE also provides for TSS utilization planning, logistics, remote operation, and for off-line data analysis, and permanent archive of both the Targeted Search and Sky Survey data.

The TSE is being developed "in-house" by the NASA Ames Research Center (ARC). ARC is performing TSE Systems Engineering and developing a preproduction version of the Targeted Search System (TSS). The preproduction TSS will be used to initiate the MOP Targeted Search on Columbus Day, 1992 at the Arecibo Observatory in Puerto Rico.